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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants : Tomohiro Nishi, et al.

Serial No. : 10/085,659

Filed : February 26, 2002

For : OPTICAL STATE MODULATION METHOD AND  
SYSTEM, AND OPTICAL STATE MODULATION  
APPARATUS

Examiner : Yenke, Brian P.

Art Unit : 2622

Confirmation No. : 8660

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APPEAL BRIEF OF APPELLANTS

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Sir:

This is an Appeal from the Office Action issued by the Examiner dated March 7, 2006, in  
the above-identified application, rejecting claims 1-23. A Notice of Appeal was filed on June 28,

2006 and a Notice of Panel Decision was mailed on July 31, 2006. This Brief is submitted in accordance with 37 C.F.R. §41.37. Appellants submit herewith a check in the amount of \$500.00 as payment of the fee. The Commissioner is authorized to charge any additional fee, or credit any overpayment for this paper, to Deposit Account No. 50-0320.

1. **REAL PARTY IN INTEREST**

The real party in interest is Sony Corporation, a Japanese Corporation with offices at 7-35 Kitashinagawa 6-Chome, Shinagawa-ku, Tokyo, 141-0001 Japan,. The assignment of this application is recorded in the United States Patent and Trademark office at Reel 012944; Frame 0411.

2. **RELATED APPEALS AND INTERFERENCES**

Upon information and belief, the undersigned attorney does not believe that there is any appeal or interference that will directly affect, be directly affected by or have a bearing on the Board's decision in the pending appeal.

3. **STATUS OF THE CLAIMS**

The Application was filed with claims 1-23 on February 26, 2002, and assigned Application Serial No. 10/085,659. This application claims the benefit of Japanese Patent Application No. 2001-283180, filed on September 18, 2001, respectively.

The Examiner issued an Office Action on November 26, 2004. In the Office Action, the Examiner rejected claims 1-23 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,674,561. In response,

Appellants submitted a Terminal Disclaimer on February 28, 2005 thereby obviating the Double Patenting rejection.

The Examiner then issued an Office Action on June 21, 2005. In the Office Action, the Examiner rejected claims 1-23 under a provisional obviousness-type double patenting rejection over claims of copending Application No. 10/385,225. In response, Appellants submitted a Terminal Disclaimer on September 21, 2005 thereby obviating the Double Patenting rejection.

The Examiner then issued an Office Action on November 25, 2005. In the Office Action, the Examiner rejected claims 1-23 under 35 U.S.C. §102(b) as allegedly anticipated by WO 01/33846 to Burstyn (hereinafter, merely “Burstyn”). In response, Appellants submitted an amendment on February 16, 2006 thereby adding the limitation “...a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation” to independent claims 1 and 10-23.

The Examiner then issued a Final Rejection on March 7, 2006. In the Office Action, the Examiner rejected claim 1-23 under 35 U.S.C. §103(a) as allegedly unpatentable over Burstyn. In response, on May 24, 2006 Appellants submitted a response traversing the rejections to the claims.

The Examiner issued an Advisory Action on June 8, 2006, maintaining the rejections recited in the Final Office Action.

A Notice of Appeal was filed by Appellants on June 28, 2006 with a Pre-Appeal Brief Request for Review. A Notice of Panel Decision from Pre-Appeal Brief was mailed on July 31, 2006.

Accordingly, the status of the claims may be summarized as follows:

Claims Allowed:	None.
Claims Rejected:	1-23.
ClaimsAppealed:	1-23.

The rejected claims 1-23 are set forth in the Appendix attached hereto.

Appellants appeal the Final Rejection of claims 1-23, which constitute all of the currently pending claims in this application.

4. **STATUS OF THE AMENDMENTS**

Appellants believe that all the submitted Amendments have been entered.

5. **SUMMARY OF THE CLAIMED SUBJECT MATTER**

The citations to Figures and Specification locations are provided immediately following elements of independent claim 1, which is summarized below. However, such citations are provided merely as examples and are not intended to limit the interpretation of the claims or to evidence or create any estoppel.

There are fifteen independent claims (1 and 10-23) in the instant application at issue in this appeal, and are directed to optical state modulation which comprises a step of periodically modulating luminance (Pages, 7, 12-17) of an original display image in temporal domain (Pages 20-22) so as to present an optical state variation (Pages 5-6, 10), which is independent of the original display image and does not hamper direct watching thereof, on a recorded image obtained through image-capturing of the original display image.

Claim 1 is directed to an optical state modulation method comprising: periodically modulating luminance (Page 7, lines 6-15, Pages 12-17) of an original display image in temporal domain (Figures 3 and 4; Pages 20-22) to generate an optical state variation on a recorded image that is obtained by image-capturing of the modulated display image (Page 19, line 20 - Page 21, line 10), said optical state variation being independent of said original display image and without

generating a hampering effect when said displayed image is directly watched (Page 24, lines 12-26), utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation (Figure 7; Page 26, line 21 - Page 27, line 13).

Independent claims 10-23 are similar in scope to claim 1.

## **6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Appellants request review of the rejection of:

- 1) claims 1-23 under 35 U.S.C. §103(a) as allegedly unpatentable over WO 01/33846 to Burstyn (hereinafter, merely “Burstyn”).

## **7. GROUPING OF THE CLAIMS**

Claims 1-23 fall into four separate groups. Group I: claims 1-9; with independent claim 1. Group II: independent claims 10-12. Group III: independent claims 13-15, 22 and 23. Group IV: independent claims 16-21. The claims of each individual group stand and fall together.

## **8. ARGUMENTS**

### **The §103 Rejections Should be Withdrawn Because Claim Features are Not Disclosed, Taught or Suggested in the Reference**

Independent claim 1 recites, *inter alia*:

“An optical state modulation method comprising:

periodically modulating luminance of an original display image in temporal domain so as to generate an optical state variation on a recorded image that is obtained by image-capturing of the modulated display image...

utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation.” (emphasis added)

It is respectfully submitted that Burstyn fails to teach or suggest the features of claim 1. Specifically, the Office Action states that “Burstyn does not explicitly recite a rotating filter...” (See March 7, 2006 Office Action, page 3).

The Examiner asserts that it would have been obvious to one of ordinary skill in the art for Burstyn to “utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation.”” Appellants traverse and request that the Examiner provide documentary evidence to support the Examiner’s position in accordance with MPEP 2144.03(C). Moreover, Appellants submit that Burstyn does not provide a rotation filter which includes a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation as suggested by the Examiner.

Appellants submit that Burstyn fails to teach or suggest the above-identified features of claim 1. Specifically, Appellants submit that there is no teaching or suggestion of an optical state modulation method utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation, as recited in claim 1.

Appellants submit that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify the reference or to combine reference teachings either in the references themselves or in the general knowledge available to one of ordinary skill in the art; second, there must be a reasonable

expectation of success; third, the prior art reference or references must teach or suggest all the claim limitations. M.P.E.P. § 2143.

Appellants submit that the fact that Burstyn relates to preventing the illegal recording of film and video through a film anti-piracy system by introducing distortion into an illegally copied image while maintaining a high quality image for viewing by a legitimate audience is not sufficient to assert that it would have been obvious for one of ordinary skill in the art to clarify Burstyn to teach utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation, as recited in claim 1. Appellants submit that there is no suggestion or motivation for one skilled in the art to utilize a rotation filter having a rotate-able filter part in luminance modulation.

Therefore, the instant invention is not obvious and Appellants respectfully submit that claim 1 is patentable.

Independent claim 10 recites, *inter alia*:

“An optical state modulation application system comprising:

a projection type display apparatus projecting a display image onto a screen; and

an optical state modulation apparatus acting on a projection light in a projection light path to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.” (emphasis added)

Appellants submit that Burstyn fails to teach or suggest the above-identified features of claim 10. Specifically, Appellants submit that there is no teaching or suggestion of an optical state modulation application system comprising a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation, as recited in claim 10.

Appellants submit that to establish a *prima facie* case of obviousness for the reasons stated above.

Therefore the instant invention is not obvious and Appellants respectfully submit that claim 10 is patentable.

For reasons similar to those described above with regard to independent claim 10, independent claims 11-12 are also believed to be patentable.

Independent claim 13 recites, *inter alia*:

“An optical state modulation application system comprising:

a direct view type display apparatus displaying a display image onto a display screen; and

an optical state modulation apparatus generating an effect on a display light to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said display screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.” (emphasis added)

Appellants submit that Burstyn fails to teach or suggest the above-identified features of claim 13. Specifically, Appellants submit that there is no teaching or suggestion of an optical state modulation application system comprising a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation, as recited in claim 13.

Appellants submit that to establish a *prima facie* case of obviousness for the reasons stated above.

Therefore the instant invention is not obvious and Appellants respectfully submit that claim 13 is patentable.

For reasons similar to those described above with regard to independent claim 13, independent claims 14, 15, 22 and 23 are also believed to be patentable.

Independent claim 16 recites, *inter alia*:

“An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to a projection light projected from a projection type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

said displayed image being an image displayed on a screen to which the modulated projection light is projected,

said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.” (emphasis added)

Appellants submit that Burstyn fails to teach or suggest the above-identified features of claim 16. Specifically, Appellants submit that there is no teaching or suggestion of an

optical state modulation apparatus of a luminance modulation application system, wherein a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation, as recited in claim 16.

Appellants submit that to establish a *prima facie* case of obviousness for the reasons stated above.

Therefore the instant invention is not obvious and Appellants respectfully submit that claim 16 is patentable.

For reasons similar to those described above with regard to independent claim 16, independent claims 17-21 are also believed to be patentable.

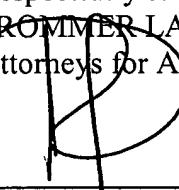
The other claims are each dependent from one of the independent claims discussed above and are therefore believed patentable for at least the above-identified reasons.

### CONCLUSION

For the reasons discussed above, claims 1-23 are patentable. It is, therefore, respectfully submitted that the Examiner erred in rejecting claims 1-23, and a reversal by the Board is solicited.

Respectfully submitted,  
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## APPENDIX I

### CLAIMS ON APPEAL

1. (Previously Presented) An optical state modulation method comprising:  
periodically modulating luminance of an original display image in temporal  
domain to generate an optical state variation on a recorded image that is obtained by image-  
capturing of the modulated display image,

    said optical state variation being independent of said original display image and  
without generating a hampering effect when said displayed image is directly watched,  
    utilizing a rotation filter, including a rotate-able filter part having a sinusoidal  
density variation along its circumferential direction, in said luminance modulation.

2. (Original) The optical state modulation method according to claim 1,  
wherein,

    when said luminance modulation is performed based on a sinusoidal waveform,  
an amplitude and frequency of said sinusoidal waveform are determined to satisfy a first  
condition,

    said first condition being that an amplitude and frequency of said optical state  
variation in each frame of said recorded image obtained by an image-capturing apparatus  
correspond to the value equal or more than a temporal frequency contrast sensitivity of human  
vision determined at the luminance of said original display image.

3. (Original) The optical state modulation method according to claim 2,  
wherein,

in addition to said first condition, the amplitude of said sinusoidal waveform is determined to satisfy a second condition,

said second condition being that the amplitude of said luminance modulation is equal or less than an amplitude that is obtained from said temporal frequency contrast sensitivity of human vision by setting a frequency component thereof to the frequency of said sinusoidal waveform determined in claim 2 for the luminance of said original display image.

4. (Original) The optical state modulation method according to claim 1, wherein,

when said luminance modulation is performed based on a composite waveform, an amplitude and frequency of at least one of sinusoidal wave components composing said composite waveform are determined to satisfy a first condition,

said first condition being that an amplitude and frequency of said optical state variation in each frame of said recorded image obtained by an image-capturing apparatus correspond to the value equal or more than a temporal frequency contrast sensitivity of human vision determined at the luminance of said original display image.

5. (Original) The optical state modulation method according to claim 4, wherein,

in addition to said first condition, the amplitude of said at least one of sinusoidal wave components is determined to satisfy a second condition,

said second condition being that the amplitude of said luminance modulation is equal or less than an amplitude that is obtained from said temporal frequency contrast sensitivity of human vision by setting a frequency component thereof to the frequency of said at least one of

sinusoidal wave components determined in claim 4 at the luminance of said original display image.

6. (Original) The optical state modulation method according to claim 1, wherein

    said luminance modulation is performed by applying different types of luminance modulation on corresponding spatial positions of said original display image.

7. (Original) The optical state modulation method according to claim 1, wherein

    said luminance modulation is performed by applying different types of luminance modulation on corresponding time periods.

8. (Original) The optical state modulation method according to claim 1, wherein

    said luminance modulation is performed so as to hold a same display luminance in each frame before and after said luminance modulation, said display luminance being a luminance perceived by a audience.

9. (Original) The optical state modulation method according to claim 1, wherein

    said optical state variation appeared on said recorded image is a variation in color domain.

10. (Previously Presented) An optical state modulation application system comprising:

a projection type display apparatus projecting a display image onto a screen; and an optical state modulation apparatus acting on a projection light in an projection light path to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

11. (Previously Presented) An optical state modulation application system comprising:

a projection type display apparatus projecting a display image onto a screen; and an optical state modulation apparatus controlling a light source of said display apparatus to apply a periodic luminance modulation in temporal domain to an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said screen is directly watched, and

    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

12. (Previously Presented) An optical state modulation application system comprising:

    a projection type display apparatus projecting a display image onto a screen; and  
    an optical state modulation apparatus controlling an image signal of said display apparatus to apply a periodic luminance modulation in temporal domain on an original display image, wherein

    the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

    said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said screen is directly watched, and

    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

13. (Previously Presented) An optical state modulation application system comprising:

a direct view type display apparatus displaying a display image onto a display screen; and

an optical state modulation apparatus generating an effect on a display light to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said display screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

14. (Previously Presented) An optical state modulation application system comprising:

a direct view type display apparatus displaying a display image onto a display screen; and

an optical state modulation apparatus controlling a light source of said display apparatus to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said display screen is directly watched, and

    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

15. (Previously Presented) An optical state modulation application system comprising:

    a direct view type display apparatus displaying a display image onto a display screen; and

    an optical state modulation apparatus controlling an image signal of said display apparatus to apply a periodic luminance modulation in temporal domain on an original display image, wherein

    the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

    said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said display screen is directly watched, and

    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

16. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to a projection light projected from a projection type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

said displayed image being an image displayed on a screen to which the modulated projection light is projected,

said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

17. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to a light source of a projection type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

said displayed image being an image displayed on a screen to which a projection light from the modulated light source is projected,

said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

18. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to an image signal of a projection type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

    said displayed image being an image displayed on a screen to which a projection light according to the modulated image signal is projected,

    said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

19. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

    a periodic luminance modulation in temporal domain is applied to a display light of a direct view type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

    said displayed image being an image of the modulated display light of said direct view type display apparatus,

    said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

20. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to a light source of a direct view type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

    said displayed image being an image from the modulated light source of said direct view type display apparatus,

    said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

21. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

    a periodic luminance modulation in temporal domain is applied to an image signal of a direct view type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

    said displayed image being an image according to the modulated image signal of said direct view type display apparatus,

    said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

22. (Previously Presented) Apparatus for displaying an image, comprising:  
    a display unit, and

a modulation unit generating temporal modulation in an original image to be displayed on said display unit, wherein

    said luminance modulation causes an optical state variation perceivable by a human vision on a recorded image obtained by image-capturing of the modulated original display image, and

    said optical state variation causes no substantial visible effect perceivable by the human vision when said modulated original display image is directly watched, and  
    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

23. (Previously Presented) Apparatus for displaying an image, comprising:  
    means for displaying an image; and  
    means for generating temporal modulation in an original image to be displayed, wherein

    said luminance modulation causes an optical state variation perceivable by a human vision on a recorded image obtained by image-capturing of the modulated original display image, and

    said optical state variation causes no substantial visible effect perceivable by the human vision when said modulated original display image is directly watched, and  
    a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

**APPENDIX II**

**EVIDENCE**

None

**APPENDIX III**  
**RELATED PROCEEDINGS**

None